Intel Atom Processor N270 1.60GHz
Fanless PC 12.1 inch Model

PANEL-PC 955 Series

Left : Panel mount Type Right : Open frame type

Model	Shape	CPU	Memory	Pre-installed OS (storage device)
PT-955LX-DC5000	Panel mount type	Intel Atom Processor N270 (1.60GHz)	1GB	None
PT-955LX-DC531A				Windows Embedded Standard 2009 (English version)(CF 2GB)
PT-955LX-DC5312				Windows Embedded Standard 7 (Japanese version)(CF 4GB)
PT-955LXF-DC5000	Open frame type			None
PT-955LXF-DC531A				Windows Embedded Standard 2009 (English version)(CF 2GB)
PT-955LXF-DC5312				Windows Embedded Standard 7 (Japanese version)(CF 4GB)

Please contact us for using OS in English or other languages.
https://www.contec.com/contact/
* Specifications, color and design of the products are subject to change without notice.

This product is a fanless PANEL-PC for embedded use based on Intel (R) Atom processor N270 and a 945GSE (GMA950 incorporated) chipset. Adoption of the long life power saving LED and Intel (R) Atom processor offers low power consumption while ensuring sufficient performance.
The “resource-saving PC” contributes downsizing and power-saving of equipment to reduce your running cost and to promote energy efficiency.
It has extended interfaces such as 1000BASE-T, USB2.0, and serial. It adopts CF card for the storage and is fanless, which demonstrate the totally spindleless design that simplifies the maintenance.
Embedded-type CPU and chip set have been adopted. The use of readily available parts ensures the ease of the use of the product. In addition, the use of a Contec-customized BIOS allows support to be provided at the BIOS level.
According to your application, two types (the panel mount type and the open frame type) are available.

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Features

Contributing to reduction of running cost and promotion energy efficiency

Power consumption is about 30% less compared to the conventional standard model (IPC-PT700HX-AC426). Due to adoption of the low power consumption LED backlight and Intel (R) Atom processor N270, low power consumption, approximately 41W*1 even at a high load condition, is achieved at the same time sufficient performance is ensured, contributing to the lesser cost.

*1 Median value of power consumption of a standard model PT-955LX-DC531A with input power of 24VDC under unloaded and fully-loaded conditions.

Contributing to smaller device size. Small footprint with depth of 43.8mm*2.

Depth is reduced by approximately 40% compared to the conventional standard model (IPC-PT700HX-AC426). With our original heat release technology, the slim case with depth of 43.8mm is made offering fanless design (no use of a fan motor which has a finite life). This contributes to downsizing of the equipment. The mounting structure conforms to VESA standard 100 x 100 mm and can be mounted on a LCD arm.

*2 Dimension of PT-955LX-DC531A not including the mounting bracket.

Slitless / Fanless design that reduces maintenance work

This product's spindleless design eliminates the heat dissipating slit and CPU fan and adopts CF card for the storage. It is free from dusts and foreign objects, and the use the parts that degrades over the years is avoided in most case, resulting in drastic alleviation of the maintenance burden.

High definition supported DVI external display output

This product has the up to 1920 x 1080 pixels DVI external display output as standard feature. A stand-alone two-displays application which, for example, displays the screen on a big LCD TV separately from the main LCD, can be built. Also, with the accompanying analog RGB (15 pin HD-SUB) conversion adapter, connecting to an analog RGB display is supported.

Remote power management function to reduce operation tasks

This product supports timed/automated system start-up (Resume By Alarm). For example, it enables unattended operation, such as starting to show information of an establishment in unison at opening time. Also, it supports system start-up externally via network (Wake On LAN) and modem (Power On by Ring). It encourages significant labor saving in operation.

Major types of peripherals are supported with rich interfaces including the two CF card slots

It has a variety of extended interface such as 1000BASE-T x 2, USB2.0 x 4, serial (RS-232C) x 2. It has 2 CF card slots that can use for OS and data. They are very useful because you can use one slot for system start-up and the other for maintenance, system log, or taking away the collected data.

Falling-off prevention tools and cable clamps provided to avoid trouble caused by disconnected cable

This product stays trouble-free, being equipped with USB removal prevention fitting and cable clamp for connectors with no locking mechanism, such as USB cable, and with hardware to properly mount and avoid falling out of CF card.

Safety design required for embedded applications

Retention of CMOS data by EEPROM allows the system to start up even when the battery has run out. For Windows Embedded Standard installed model, it is possible to use the EWF*3 function of OS. It is designed for safety required for embedding purpose, for example, prohibiting unwanted writing to the CF card with EWF function will relieve the concern about the writing limits to the CF card and prevent an unintentional system alteration.

*3 EWF (Enhanced Write Filter) is a function specific to Windows Embedded Standard that protects the disk from being actually written by redirecting the writing to RAM.

A wide range of power supplies (10.8 - 31.2VDC) supported

As the product supports a wide range of power (10.8 - 31.2VDC), it can be used in a variety of power environments. The separately available AC adapter adds support for 100VAC power.

Touch panel enables keyboard-less operation.

These products have analog touch panel enabling mouse emulation using driver software.

Supported OS

Windows Embedded Standard 2009

Windows Embedded Standard 7

Functional Specification

Model		PT-955LX-DCxxxx	PT-955LXF-DCxxxx
Assembly type		Panel mounted	Embedded type
CPU		Intel® Atom™ Processor N270 (1.60GHz / FSB533MHz)	
Chip set		Intel® 945GSE + ICH7M-DH	
BIOS		BIOS (mfd. by Award)	
Memory		1GB (200pin SO-DIMM x 1), PC2-4300 DDR2 SDRAM	
Graphic	Controller	Intel® GMA950 (Built in 945GSE chip set) Multi-monitor function supported *1	
	Video RAM	Main memory shared	
	Video BIOS	64KB (C0000H-CFFFFH)	
LCD type	LCD type	12.1-inch TFT color LCD, XGA(1024 x 768), 260,000 colors	
	Backlight	LED method, The ON/OFF software can control.	
Touch panel	Resolution	4096 x 4096 (emulated in 1024 x 768 mode)	
	Detection method	Resistive-film analog type	
	Connection	Internal serial port	
External display output	DVI*2	640 x 480, 800 x 600, 1,024 x 768, 1,152 x 864, 1,280 x 600, 1,280 x 720, 1,280 x 768, 1,280 x 960, 1,280 x 1,024, 1,360 x 768, 1,400 x 1,050, 1,600 x 900, 1,600 x 1,200, 1,856 x 1,392, 1,920 x 1,080, 1,920 x 1,200 (16,770,000 colors)	
	Analog RGB	640 x 480, 800 x 600, 1,024 x 768, 1,280 x 768, 1,280 x 1,024, 1,360 x 768, 1,400 x 1,050 (16,770,000 colors)	
Audio		AC97 compliant, LINE OUT x 1, MIC IN x 1	
IDE		Primary IDE Master / Slave (Max 2 devices), CF card slot connection	
LAN*3		Intel® 82573L Controller 1000BASE-T/100BASE-TX/10BASE-T x 2 (Wake On LAN support)	
USB		USB 2.0-compliant 4 port	
Serial		RS-232C 3 port (one of the ports is used for touch panel), Baud rate: 50 - 115,200bps	
General-purpose I/O		None	
Hardware monitoring		Monitoring CPU temperature, board temperature, power voltage	
Watch dog timer		Software programmable, 255 level (1sec - 255 sec), Causes a reset upon time-out.	
Real-time clock		ICH7M-DH integrated, The real-time clock is accurate within ±3 minutes (at 25°C) per month, Lithium backup battery life : 10 years or more	
Power Management		Power management setup via BIOS, Power On by Ring / Wake On LAN, Supports PC98/PC99 ACPI Power management	
Interface	External display	1 port (29 pin DVI-I connector), DVI-analog RGB conversion adapter attachment	
	Audio	LINE OUT: ϕ3.5 Stereo mini jack, Full-scale output level 1.5Vrms (Typ.), Dual 50mW Amplifier MIC IN: ϕ3.5 Stereo mini jack, Full-scale input level 1.3Vrms (Typ.)	
	CF card slot	2 slots (CF1/CF2), CF CARD Type I, bootable	
		PT-955LX-DCx000 : -, PT-955LX-DCx31A : CF1 is finished mounting CF (2GB, 1 partition) *4 PT-955LX-DCx312 : CF1 is finished mounting CF (4GB, 1 partition) *4	PT-955LXF-DCx000 : -, PT-955LXF-DCx31A : CF1 is finished mounting CF (2GB, 1 partition) *4 PT-955LXF-DCx312 : CF1 is finished mounting CF (4GB, 1 partition) *4
	LAN*3	2 port (RJ-45 connector)	
	USB	4 port (A-TYPE connector)	
	RS-232C	2 port (9pin D-SUB connector [male])	
Power supply	Power supply connector	12 - 24VDC *5	
	Input power supply voltage	10.8 - 31.2VDC	
	Current consumption	12VDC: 3.5A(Typ.) 4.5A (Max.) 24VDC: 1.7A(Typ.) 2.3A (Max.)	
	External device power supply capacity	- CF card slot: +3.3VDC 1A (500mA per slot) - USB port: +5V 2A (500mA per slot)	
Waterproofing and dust-proofing		Front panel IP65 standard	Front part conforming to IP65 (Use the packing supplied.)
Panel cut dimensions (mm)		303.0 (W) x 243.0 (H)	250.0 (W) x 190.0 (H)
Physical dimensions (mm)		316(W) x 43.8(D) x 256(H) (internal-panel depth) (Storage device isn't included)	335W) x 49(D) x 275(H) (Storage device isn't included)
Weight		3.6kg (without mounting bracket) 3.7kg (with mounting bracket)	3.5kg (without mounting bracket) 3.9kg (with mounting bracket)

*1 A multi-screen display function using the main LCD and an external display. The "Twin" option is, however, not available for a combination with an external DVI-connected display. "Extended desktop" or "Intel ® dual display clone" can be used instead.
*2 Display of the DVI-connected screen becomes active after the Windows starts up.
*3 Care about ambient temperature when using 1000BASE-T. Refer to "Installation Requirements" in chapter 3 for details.
*4 The capacity of CF is a value when 1GB is calculated by 1 billion bytes. The capacity that can be recognized from OS might be displayed fewer than an actual value.
*5 Use a power cable shorter than 3m.

Installation Environment Requirements

Model		PT-955LX-DCxxxx	PT-955LXF-DCxxxx
Operating temperature *6		0 - 50°C (0 - 45ºC when using 1000BASE-T)	
Storage temperature		-10 - 60°C	
Operating humidity		10 - 90%RH (No condensation)	
Floating dust particles		Not to be excessive	
Corrosive gas		None	
Noise resistance	Line noise	AC line / ±2kV, Signal line/±1kV (IEC61000-4-4 Level 3, EN61000-4-4 Level 3)	
	Static electricity resistance	Contact discharge / ±4kV (IEC61000-4-2 Level 2, EN61000-4-2 Level 2), Atmospheric discharge / ±8kV (IEC61000-4-2 Level 3, EN61000-4-2 Level 3)	
Vibration resistance	Sweep resistance	10 - 57Hz / semi-amplitude 0.15 mm 57 - 150Hz / 2.0G, 40 min. each in x, y, and z directions (JIS C60028-2-6-compliant, IEC68-2-6-compliant)	
Impact resistance		30G, half-sine shock for 11 ms in x, y, and z directions (JIS C60068-2-27-compliant, IEC68-2-27-compliant)	
Grounding		Class D grounding, SG-FG / continuity	

*6 : For more details on this, please refer to page5, "Installation Requirements".

List of Options

AC adapter

IPC-ACAP12-04 AC adapter
(Input: 100-240VAC, Output: 12VDC 4A)

⚠ CAUTION
When you use this AC adapter with PT955, the current consumption of USB + 5VDC should be 1.0A or less for four ports in total.

Screen protective sheets

IPC-CV12 12.1-inch screen protective sheets
(10 sheets)

⚠ CAUTION
Note that the sheets may not protect the screen because it is a few millimeters smaller than the screen size.

Protective sheets		PT-955 Series	
Model	Sheet size (mm)	Model	Screen size (mm)
IPC-CV12	250.0 × 188.0	PT-955LX-DCxxxx	249.0×188.5
IPC-CV12	250.0 × 188.0	PT-955LXF-DCxxxx	250.0×190.0

CF Card

CF-1GB-B 1GB CompactFlash for Fix Disk
CF-2GB-B 2GB CompactFlash for Fix Disk
CF-4GB-B 4GB CompactFlash for Fix Disk
CF-8GB-B 8GB CompactFlash for Fix Disk

Other option

IPC-SND-03 Desk stand

Additional TFT color LCD

< LVDS&DVI input type >

FPD-H71XT-DC1*1 (15inch 1024 x 768dots,Panel mounted type)
FPD-L71ST-DC1*1 (12.1inch 800 x 600dots,Panel mounted type)
FPD-S71VT-DC1*1 (6.4 inch 640 x 480dots, Panel mounted type)
FPD-H75XT-DC1*1 (15inch 1024 x 768dots, Embedded type)
FPD-L75ST-DC1*1 (12.1inch 800 x 600dots, Embedded type)
FPD-M75VT-DC *1 (10.4inch 640 x 480dots, Embedded type)

*1 Please purchase the optional connection cable [IPC-DVI/D-020, IPC-DVI/D-050].

<Analog RGB types>

FPD-H21XT-AC (15inch 1024 x 768 dots, Panel mounted type)
FPD-L21ST-AC (12.1inch 800 x 600 dots, Panel mounted type)
FPD-M21VT-AC (10.4inch 640 x 480 dots, Panel mounted type)

Display cable only for DVI input

IPC-DVI/D-020 DVI-D Cable (2m)
IPC-DVI/D-050 DVI-D Cable (5m)

⚠ CAUTION

Precautions when using products other than our options

If a product other than our option is used, the normal operation may be impaired or the functions may be limited.

Precautions when Using Additional Display

- An additional display can be used to enable simultaneous screen display with the PANEL-PC main display.
- If the resolution of the additional display is different from that of the PANEL-PC main display, the size of screen images on the additional display will be decreased or increased with lower image quality.
- When using the main unit and touch panel function at the same time, use a USB connection for the touch panel.

* Check the CONTEC's Web site for the latest information on these options.

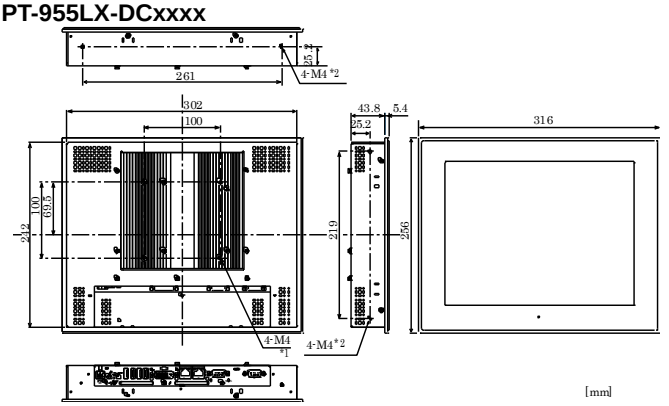
Packing List

	PT-955LX			PT-955LXF		
	-DCx000	-DCx31A	-DCx312	-DCx000	-DCx31A	-DCx312
	[Panel Mount]			[Open Frame]		
	Base model	OS-installed model		Base model	OS-installed model	
		[WES2009] English	[WES7] Japanese		[WES2009] English	[WES7] Japanese
Name	Pcs.	Pcs.	Pcs.	Pcs.	Pcs.	Pcs.
Panel-PC	1	1	1	1	1	1
Waterproof packing(for PT955LX)	1	1	1	None	None	None
Waterproof packing(for PT955LXF)	None	None	None	1	1	1
The attachment fittings(for PT955LX)	10	10	10	None	None	None
The attachment fittings (for PT955LXF, long)	None	None	None	2	2	2
The attachment fittings (for PT955LXF, short)	None	None	None	2	2	2
CF card removal prevention fitting	1	1 *1	1 *1	1	1 *1	1 *1
Screws for attachment fittings Three-point sems screw (M4 x 8)	None	None	None	8	8	8
Screws (M4x20)	None	None	None	10	10	10
Sealing washer (M4)	None	None	None	10	10	10
Washer (M4)	None	None	None	10	10	10
Spring Washer (M4)	None	None	None	10	10	10
Nut (M4)	None	None	None	10	10	10
Power supply connector complete set						
Power connector	1	1	1	1	1	1
Contact	4	4	4	4	4	4
Cable clamp	1	1	1	1	1	1
DVI-analog RGB conversion adapter	1	1	1	1	1	1
Product guide (this sheet)	1	1	1	1	1	1
IPC Precaution List	1	1	1	1	1	1
Royalty consent contract	None	1	1	None	1	1
Setup Procedure Document	None	1	None	None	1	None
Notes on using Windows Embedded Standard 2009	None	1	None	None	1	None
Notes on using Windows Embedded Standard 7 And Setup Procedure Document	None	None	1	None	None	1
Recovery Media *2	None	1	1	None	1	1

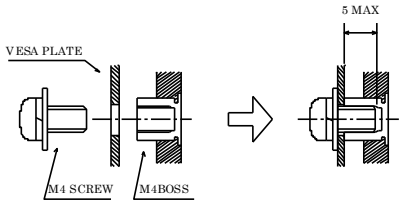
*1 It is attached to the main body.
*2 Please confirm latest information on the CONTEC homepage though the user's manual is stored in Recovery Media. The installation method is described in this document as well as the Users Manual. [File storing place: \Manual]

Physical Dimensions

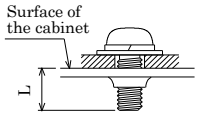
PT-955LX-DCxxxx



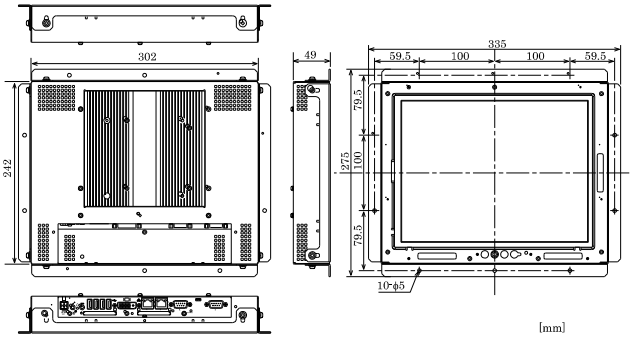
*1 : The length (L) from the tip of M4 boss to the M4 screw tip should be 5mm or less.
If not doing so, it may be exactly fixed.



*2 : The length (L) from the surface of the cabinet to the screw tip should be 5mm or less.
If not doing so, it may be damaged.

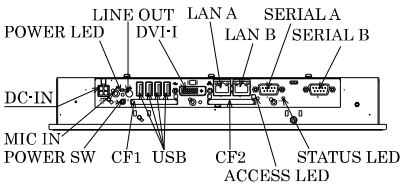


PT-955LXF-Dxxxx

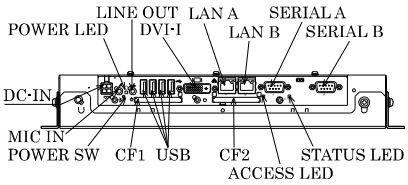


Bottom view

PT-955LX-DCxxxx

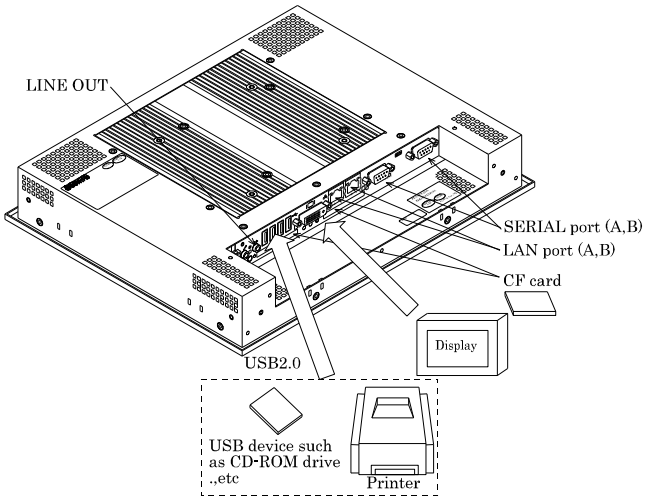


PT-955LXF-DCxxxx



Name	Function
POWER-SW	Power switch
POWER LED	Power ON display LED
ACCESS LED	IDE disk access display LED
STATUS LED	Status LED
DC-IN	DC power input connector
LINE OUT	Line out (ϕ3.5 PHONE JACK)
MIC IN	Mic in (ϕ3.5 PHONE JACK)
LANA	Ethernet 1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector
LANB	Ethernet 1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector
USB	USB port connector x 4
SERIALA	Serial port A connector (9pin D-SUB/male)
SERIALB	Serial port B connector (9pin D-SUB/male)
DVI-I	Display (29pin female)
CF1	CF card slot (IDE connection mastering)
CF2	CF card slot (IDE connection slaving)

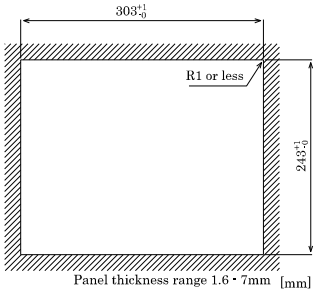
System Configuration



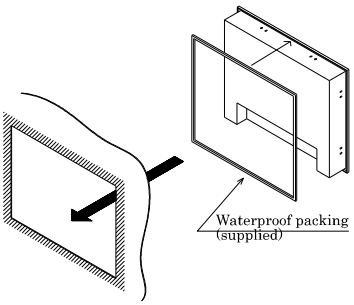
Hardware Setup

PT-955LX-DCxxxx

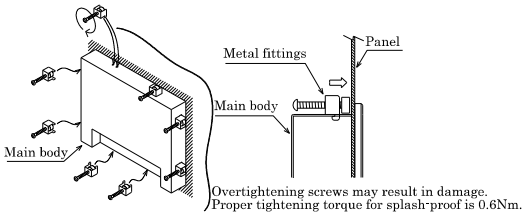
(1) Cut out a panel according to the following dimensions to mount the main unit.



(2) Place the waterproof packing in the groove on the front face of the main body and insert the main body into the panel from the external side.

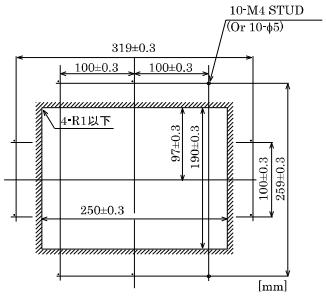


(3) Hold the attachment fittings from the inside of the panel.

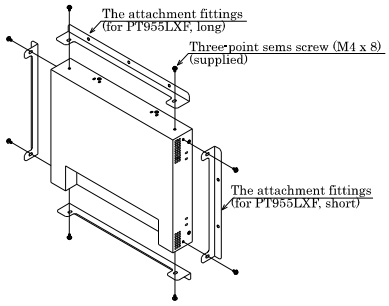


PT-955LXF-DCxxxx

(1) Cut the panel to the following dimensions to attach the main body.



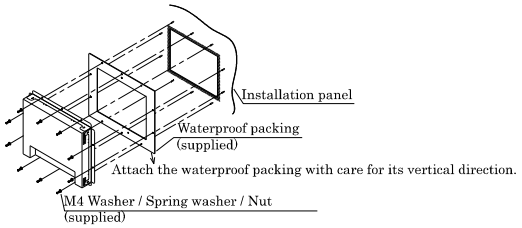
(2) Use screws to attach the bundled attachment fittings with a screw. Do not tighten screws with excess force.



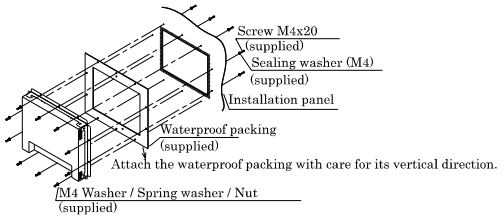
*Attached screw (M3 x 8)

⚠ CAUTION
Screw holes may be damaged if screws are tightened with a torque greater than the specified torque. The specified tightening torque is 5 - 6kgf·cm.

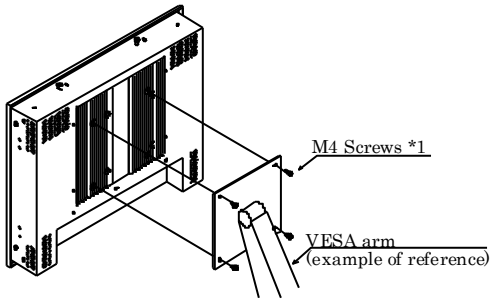
(3) Fix the panel and display as shown below.
W hen installing on a STUD installation panel



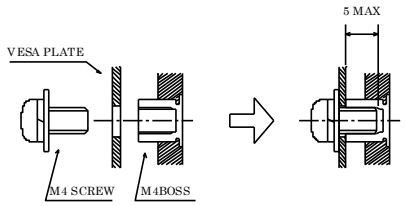
When using installation panel with screw holes



When using VESA standard 100mm mounting holes
The main body has mounting holes according to VESA standard 100mm. When using a VESA standard 100mm stand or the like, attach it as shown the following figure.



*1 : The length (L) from the tip of M4 boss to the M4 screw tip should be 5mm or less.
If not doing so, it may be exactly fixed.

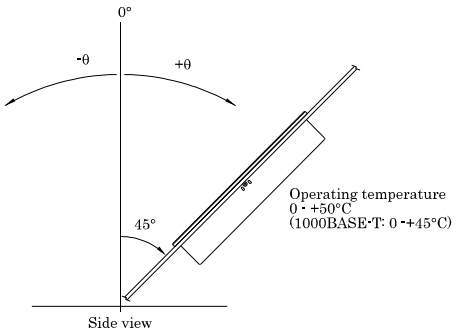


Installation Requirements

Be sure that the ambient temperature is within the range specified in the installation environment requirement by making space between the product and device that generates heat or exhaust air.

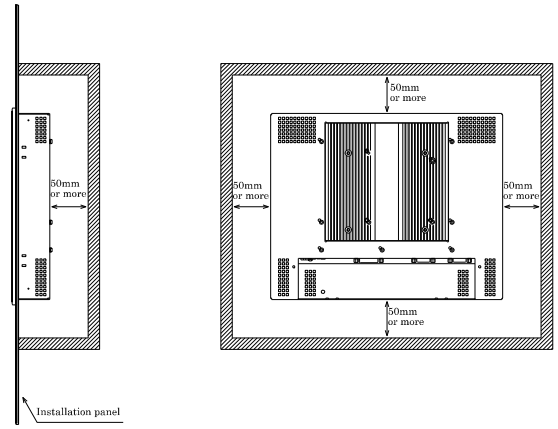
Installed angle which is recommended 45°

Installed angle of this product which is recommended is 0 - 45°. Except for that, the temperature specification of this product might not be filled.



⚠ CAUTION
Note that even though the ambient temperature is within the specified range, an operational malfunction may occur if there is other device generating high heat; the radiation will influence the product to increase its temperature.

Distances between this product and its vicinity



⚠ CAUTION
Do not install this product into the fully-sealed space except the case in which the internal temperature is adjustable by equipment such as air conditioner. Troubles such as operational malfunctions could be occurred by the temperature increase caused by long-term usage.

Ambient temperature

In this product, the ambient temperature is decided from the multiple measurement points as shown below. When making use of the product, the air current should be adjusted to prevent that all the temperatures measured at the measurement points exceed the specified temperature.